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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,224	01/21/2004	Hirotsuna Miura	9319S-000636	2202
27572	7590	09/07/2006	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			KOCH, GEORGE R	
P.O. BOX 828			ART UNIT	
BLOOMFIELD HILLS, MI 48303			PAPER NUMBER	
			1734	
DATE MAILED: 09/07/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

6

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/762,224	MIURA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	George R. Koch III	1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 18 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 20-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/13/06; 2/6/06; 1/21/04</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election with traverse of group I, claims 1-17 and 20-24 in the reply filed on 6/21/2006 is acknowledged. The traversal is on the ground(s) that all the groups can be examined without burden by the Examiner. This is not found persuasive because the groups are in separate classes, and the Examiner would need to expend office resources searching and examining the multiple inventions. Therefore, a burden exists

The requirement is still deemed proper and is therefore made FINAL.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-11, 17 and 20-24 rejected under 35 U.S.C. 102(b) as being anticipated by Renn (WO 00/23825, submitted with the IDS filed 2/6/2006).

Renn discloses a liquid drop discharge device, comprising: a discharge head discharging a liquid drop to a substrate (items 54, 60 and 64); and trajectory correcting means for applying energy to turn the liquid drop back to a predetermined trajectory when the liquid drop discharged out of the discharge head is diverted from the predetermined trajectory (items 46, 64 and 56).

As to claim 2, Renn discloses that the energy further comprises light energy (for example, page 6, which discusses laser beams and optical forces).

As to claim 3, Renn further discloses that the trajectory correcting means drives the liquid drop by "optical forces" generated by the light energy. The optical forces of the light/laser beam is considered light pressure.

As to claim 4, Renn discloses that the trajectory correcting means drives the liquid drop by "optical forces" which are inherently generated when atmosphere around the liquid drop trajectory absorbs the light energy. The optical forces of the light/laser beam is considered derived from the kinetic energy of molecules.

As to claim 5, Renn discloses that the liquid drop contains a photothermal converting material for absorbing and converting the light energy into heat. (See page 9, which discloses heating inside the laser beam)

As to claim 6, Renn discloses the trajectory correcting means includes means for emitting a light beam surrounding the predetermined trajectory of the liquid drop. (see Figure 4).

As to claim 7, Renn discloses the light beam emitting means includes a laser light source (see page 6).

As to claim 8, Renn discloses the trajectory correcting means is constructed to surround the predetermined trajectory of the liquid drop by using a planar light beam obtained by diffracting a light beam. (see page 7, which discloses refracting the light, and Figure 4, item 64).

As to claim 9, Renn discloses the trajectory correcting means surrounds the predetermined trajectory of the liquid drop by using a cylindrical light beam obtained by diffracting a light beam. (see Figure 4, item 64, which creates a somewhat conical, substantially cylindrical beam of light around the particle).

As to claim 10, Renn discloses the trajectory correcting means discharges the liquid drop into a region surrounded by the light beam, at a place closer to the light source than another where a diffracted image of the light beam is focused. (see Figure 4)

As to claim 11, Renn discloses the light beam is emitted to the substrate from a direction opposite to the discharge head to surround the predetermined trajectory of the liquid drop and the substrate can transmit the light beam (see Figure 4)

As to claim 17, Renn is capable of printing.

As to claim 20, Renn discloses a liquid drop discharge device, comprising: a discharge head selectively discharging a liquid drop to a substrate; and a liquid drop trajectory corrector proximate the discharge head, the liquid drop trajectory controller selectively applying energy to the liquid drop when the liquid drop discharged out of the discharge head diverts from a predetermined trajectory. (see rejection of claim 1 above)

As to claim 21, Renn discloses the liquid drop trajectory corrector includes a light emitter which emits a light beam surrounding the predetermined trajectory of the liquid drop. (see rejection of claim 6 above)

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As to claim 22, Renn discloses the light emitter includes a laser light source.  
(see, for example, page 6, which discloses that the light is a laser source)

As to claim 23, Renn discloses the liquid drop trajectory corrector surrounds the predetermined trajectory of the liquid drop with a planar light beam obtained by diffracting a light beam.

As to claim 24, Renn discloses the liquid drop trajectory corrector surrounds the predetermined trajectory of the liquid drop with a cylindrical light beam obtained by diffracting a light beam. (see Figure 4)

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Renn as applied above.

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As to claim 12, Renn does not disclose the claimed elements. However, official notice is taken that the light beam emitting means includes means for probing a timing at which the liquid drop crosses at least one of the light beam and a reflected beam of the light beam in response to a discharge signal of the liquid drop, and means for accomplishing at least one of weakening an intensity of the light beam and stopping emission of the light beam at the time are well known and conventional.

As to claim 13, Renn does not disclose the claimed elements. However, official notice is taken that opening/closing means for opening a discharge port of the discharge head when the liquid drop is discharged are well known and conventional.

As to claim 14, Renn does not disclose the claimed elements. However, official notice is taken that a discharge port of the discharge head that is kept open when the liquid drop is continually discharged are well known and conventional.

As to claim 15, Renn does not disclose the claimed elements. However, official notice is taken that an enclosure for covering the discharge head, wherein the enclosure is provided with a hole that passes the liquid drop discharged from the discharge head are well known and conventional.

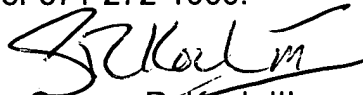
As to claim 16, Renn does not disclose the claimed elements. However, official notice is taken that a sealed vessel sealing the discharge head and the substrate, and pressure reducing means for reducing pressure in the sealed vessel are well known and conventional.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to George R. Koch III whose telephone number is (571) 272-1230. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
George R. Koch III  
Primary Examiner  
Art Unit 1734

GRK  
9/6/06